

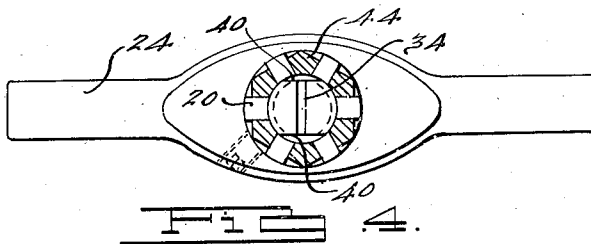
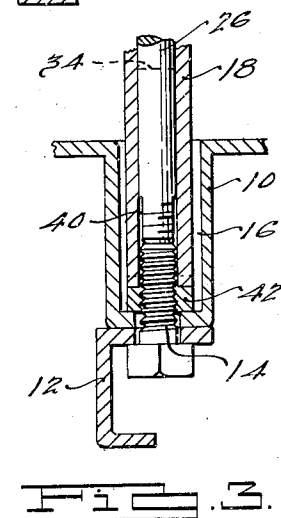
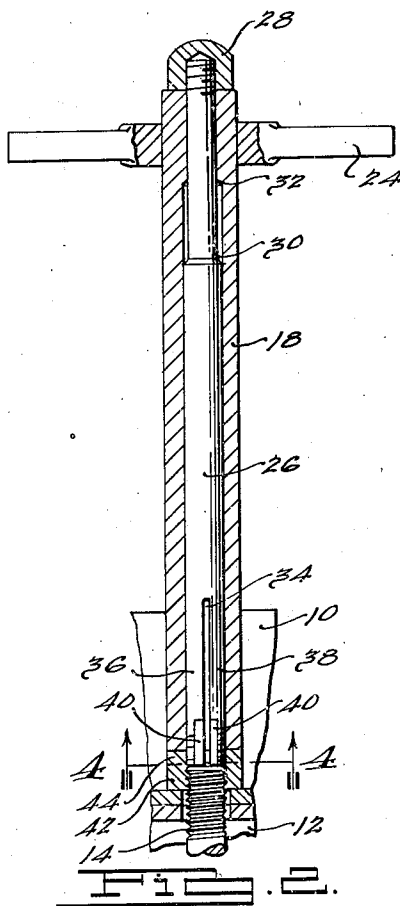
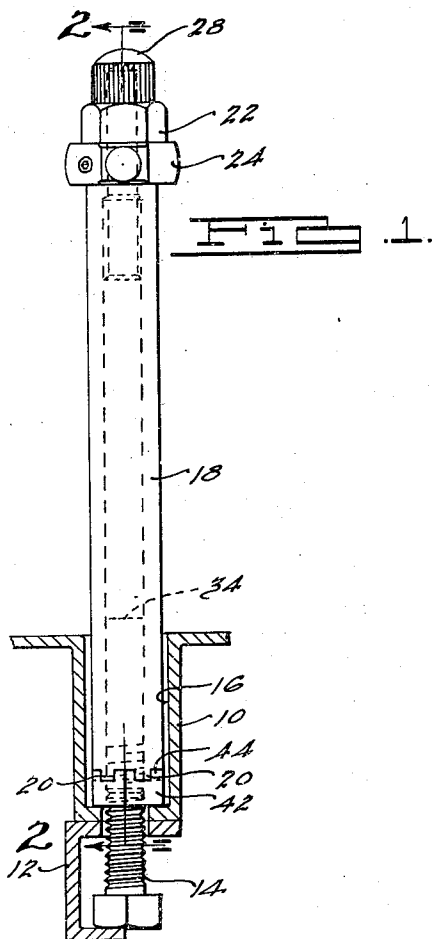
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2,461,680

WRENCH WITH THREADED NUT HOLDING MEMBER

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WRENCH WITH THREADED NUT HOLDING MEMBER

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2 Claims. (Cl. 81-90)

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This invention relates to a wrench and more particularly to a wrench for applying nuts to threaded members in recesses where the nut would be inaccessible by the use of the ordinary wrench.

An object of the invention is to provide a wrench which will support a nut while it is being conducted to a threaded member within a recess; to provide means for inter-connecting the wrench with the nut to facilitate turning; and to provide means for automatically disengaging the nut supporting means from the nut during the operation of applying the nut to the threaded member.

Another object of the invention is to provide a wrench which has a diameter no larger than the width of the nut so that the wrench can be used in a recess of a width just sufficient to receive the nut.

A further object of the invention is to provide a wrench having a reciprocating member therein provided with a threaded end portion for screw thread engagement with the nut and to split the threaded end portion longitudinally to permit inward springing of the threaded portions formed by the split.

Other objects and advantages of the invention will more fully appear from the following description taken in connection with the accompanying drawings in which:

Fig. 1 is a side elevational view of the wrench in a recess in position for applying a nut to a bolt extending through parts shown in section to be joined;

Fig. 2 is a sectional view taken on line 2-2 of Fig. 1;

Fig. 3 is a fragmentary sectional view corresponding to Fig. 1 but showing the nut in its final position for tightly holding the parts together; and

Fig. 4 is a sectional view through the nut taken on line 4-4 of Fig. 2 and showing an end view of the wrench.

Referring to the drawings there is shown an application of the wrench to a nut for securing a channel member 10 to a frame 12. A screw threaded bolt 14 is inserted in aligned openings in the channel 10 and frame 12 with the threaded end received in the recess 16 of the channel.

The wrench comprises a tubular body portion 18 having one end provided with a plurality of axially extending projections 20 which are spaced apart around the circumference of the end wall. The opposite end of the tubular body portion 18 is provided with flat surfaces 22 on its outer

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periphery for the reception of a tool 24 having an opening corresponding to the flat surfaces on the tubular body portion for turning the latter.

A rod 26 is slidably mounted in the tubular body portion 18. One end of the rod 26 projects beyond the end of the body 18 and receives a head 28 screw threaded to the end of the rod 26. This head serves as a stop against the end of the body 18 for limiting the inward axial movement of the rod 26. A shoulder 30 on the rod 26 forms a stop for engagement with an axially spaced shoulder 32 in the inner wall of the body 18.

The opposite end of the rod 26 projects slightly beyond the outer end of the projections 20 and is screw threaded preferably with a V-shaped thread. The threaded end of the rod is bifurcated by an axially extending slot 34 in the end of the rod 26 providing a pair of resilient segments 36 and 38. The opposite faces of the screw threads, adjacent the edges of the slot 34, are machined away as shown at 40 thus providing partially threaded segments 36 and 38 which may be sprung inwardly to reduce the overall diameter of the threaded portion of the segments.

The nut 42, to be received on the bolt 14, is shown in the form of a castle-nut having a plurality of circumferentially spaced projections 44 which may be received in the spaces between the projections 20 on the end of the tubular body portion 18 when the nut 42 is threaded on the end of the rod 26.

In operating the tool the rod 26 is in the position shown in Figs. 1 and 2 with the head 28 in engagement with the upper surface of body portion 18 and the threaded segments 36 and 38 projecting slightly beyond the outer ends of the projections 20. The nut 42 is then positioned with its projections 44 facing the spaces between the projections 20 on the body 18 and the rod is rotated by turning the head 28 so that the threads on the segments 36 and 38 are threaded into the nut 42, thereby drawing the nut 42 toward the end of the body portion 18 and providing a means for temporarily holding the nut on the body portion. This operation only requires a few rotations of the rod 26 to draw the projections 44 into the spaces between the projections 20 until the nut 42 tightly engages the end of the body portion 18. The threaded segments 36 and 38 enter the threaded nut partially. This distance of entry may be predetermined by adjustment of the head 28 axially on the rod 26.

The nut 42 is now securely held at the end of the wrench and since the wrench is of a

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diameter corresponding substantially to the width of the nut, it may be inserted in a recess of relatively small dimension substantially equal to the maximum width of the nut. The body portion 18 is then turned by the tool 24 and the nut is also turned with the body portion because of the inter-engaging projections 20 and 44. The turning causes the nut 42 to be threaded on the bolt 14.

When the nut 42 is threaded on the bolt 14 far enough to cause the end of the rod 26 to come into engagement with the end of the bolt 14, continued turning causes the bolt 14 to apply force tending to move the rod 26 axially. This axial force reacts upon the inclined surfaces of the cooperating rod and nut threads to apply a force having a transverse component tending to deflect the segments 36 and 38 inwardly. The slot 34 allows the segments to deflect inwardly out of threaded engagement with the end of the nut. This frees the rod 26 and the bolt end may pass into the open end of the body portion 18 pushing the rod 26 outwardly as illustrated in Fig. 3.

From the foregoing it will be understood that I have provided a wrench which may be inserted in bores or recesses of such size as to be able to receive only tools of the same diameter as the nut, one in which the nut may be temporarily secured to the wrench for positioning the nut in extremely close quarters, and one in which the nut is automatically disengaged from the wrench.

It will be apparent that shape of the nut 42 circumferentially is unimportant inasmuch as the tool engages the end of the nut. Therefore, the nut may be square, hexagonal, round, or any desired shape. It is, of course, desired to provide some form of torque transmitting connection between the tool and end of the nut such that the nut may be rotated into position by the tool.

It will be understood that various changes including the size, shape, and arrangement of parts may be made without departing from the spirit of my invention, and it is not my intention to limit its scope other than by the terms of the appended claims.

I claim:

1. A wrench comprising a tubular shank hav-

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ing a diameter substantially equal to the width of a nut with which the wrench is to be used, means at one end of said shank for engagement with the nut to permit turning thereof by turning of said shank, a rod axially slidable in said shank and projecting slightly beyond the nut engaging means on said shank, interrupted threads on the projecting end of said rod, said rod end having a longitudinal split therein to provide resilient segments carrying the threads, means at the opposite end of said shank for turning said rod, and stop means between said shank and rod for limiting the axial movement of said rod relative to said shank.

2. A wrench comprising a body portion, means at one end of said body portion for engagement with a nut to cause rotation of the nut in response to rotation of said body portion, a threaded element slidably mounted in said body portion and adapted to extend into threaded engagement with said nut to hold said nut in engagement with said means preparatory to application of the nut to a cooperating threaded member, said threaded element being provided with resilient segments carrying the threads, said resilient segments being deflectable to accommodate release of said threaded element from said nut when said threaded member penetrates said nut sufficiently to engage said threaded element.

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